



MATERIAL SAFETY DATA SHEET

1. PRODUCT AND COMPANY IDENTIFICATION

Formulator: Gowan Company
P.O. Box 5569
Yuma, Arizona 85366-5569
(800) 883-1844

Emergency Phone: (928) 783-3803
For 24-Hour Emergency Assistance (Spill, Leak, Fire, or Exposure), Call CHEMTREC®:
For Medical Emergency:

Inside the U.S.: (800) 424-9300
Outside the U.S.: (703) 527-3887
(888) 478-0798

Product: Gavel® 75DF Fungicide
Signal Word: Caution
EPA Registration No.: 10163-6414
PCPA Registration No.: 26842
Active Ingredient: Mancozeb (66.7%)
Chemical Name: A coordination product of zinc ion and manganese ethylene bisdithiocarbamate
Chemical Class: EBDC
Active Ingredient: Zoxamide (8.3%)
Chemical Name: 3, 5-Dichloro-N-(3-chloro-1-ethyl-1-methyl-2-oxopropyl)-4-methylbenzamide
Chemical Class: Benzamide
CAS No.: 8018-01-7
CAS No.: 156052-68-5

2. HAZARDS IDENTIFICATION

Emergency Overview:

This product is a brown granule with a sulfur-like odor. Contact may cause eye irritation with corneal injury and/or skin irritation.

Potential Health Effects:

Eyes: Contact may cause moderate eye irritation with corneal injury.

Skin contact: Brief contact may cause slight skin irritation with local redness.

Skin absorption: Prolonged exposure is not likely to result in this material being absorbed in harmful amounts.

Ingestion: Harmful effects not anticipated from swallowing small amounts of this product.

Inhalation: Dust may cause irritation of the upper respiratory tract (nose and throat) and lungs.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Mancozeb: [[1,2-ethanediy]bis- [carbamodithioato]](2-)] manganese mixture with [[1,2-ethanediy]bis [carbamodithioato]](2-)]zinc	CAS # 008018-01-7	66.7%
Zoxamide: 3,5-dichloro-N-(3-chloro-1-ethyl-1-methyl-2-oxopropyl)- 4-methylbenzamide	CAS # 156052-68-5	8.3%
Balance, Total, Including: Calcium Lignosulfonate Ethylene Thiourea Hexamethylene Tetramine	CAS # 008061-52-7 CAS # 000096-45-7 CAS # 000100-97-0	25.0%

Only the identities of the active ingredient(s) and any *hazardous* inert ingredients are listed. Specific information on all of this product's ingredients can be obtained by the treating medical professional or spill emergency responder for the management of exposures, spills, or safety assessments.

4. FIRST AID MEASURES

FIRST AID

- If swallowed**
- Call a poison control center or doctor immediately for treatment advice.
 - Have person sip a glass of water if able to swallow.
 - Do not induce vomiting unless told to do so by a poison control center or doctor. Do not give anything by mouth to an unconscious person.
- If on skin or clothing**
- Take off contaminated clothing.
 - Rinse skin immediately with plenty of water for 15-20 minutes.
 - Call a poison control center or doctor for treatment advice.
- If inhaled**
- Move person to fresh air.
 - If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably by mouth-to-mouth, if possible.
 - Call a poison control center or doctor for further treatment advice.
- If in eyes**
- Hold eye open and rinse slowly and gently with water for 15-20 minutes.
 - Remove contact lenses, if present, after the first 5 minutes, then continue rinsing.
 - Call a poison control center or doctor for treatment advice.

HOT LINE NUMBER

When seeking medical attention, take the container label if at all possible. If not, take information which identifies the product, that is, the product names and registration numbers. In the U.S. – In case of emergency endangering health or the environment involving this product call 1-888-478-0798.

5. FIRE FIGHTING MEASURES

Flash point: Not applicable

Flammable limits: Not applicable

Auto-ignition temperature: Not available

Extinguishing media: Use CO₂, dry chemical, water spray or foam.

Sensitivity to mechanical impact/static discharge: Not available

Unusual fire and explosion hazards: Toxic, flammable gasses, including carbon disulfide, hydrogen chloride, hydrogen sulfide and oxides of carbon, nitrogen and sulfur, as well as ethylenethiourea (ETU) will be produced under fire conditions. Chronic (long-term) exposure to ETU is associated with a number of health effects including thyroid tumors, cancer and birth defects. None of these effects are anticipated from normal occupational exposure to ETU. Short-term acute exposure to ETU, such as that likely to be experienced by HAZMAT responders or bystanders will not result in any harmful effects. ETU is readily oxidized (under fire conditions) to ethylene urea, which is a relatively innocuous material.

Fight fire from an upwind location. Consider in-house sheltering of bystanders present in the smoke shadow. In fire conditions, this product may smolder without the presence of open flame. These smoldering fires may be difficult to control. Use water spray to cool containers exposed to fire. Thoroughly wet all exposed material to prevent continued smoldering. Small amounts of water may appear to intensify the fire. Discontinue water spray if container integrity is lost. Under these conditions, carbon dioxide or foam may be a more effective fire control agent than water spray. Where conditions permit, consider ventilation and high temperature incineration of the involved product. Suspensions of Gavel 75DF dust in the air may ignite or explode. Contain firefighting water for future disposal.

The presence of water and an external heat source (such as fire) may accelerate decomposition of this product, resulting in the generation of further heat and the formation of toxic, flammable gasses. The result of this process may be continuing outbreaks of smoldering product. Under post-fire conditions, all involved palletted material should be broken down and each bag inspected for evidence of damage from exposure to heat and/or water. Offending bags should be opened in a well-ventilated area, the contents placed in secure containers, slurried with water and held for proper disposal.

Fire-fighting equipment: Wear positive-pressure self-contained breathing apparatus and full turnout gear.

6. ACCIDENTAL RELEASE MEASURES

Since Gavel 75DF is vacuum-packed in watertight bags, it will be evident when the integrity of a bag has been breached (material in bag is no longer rock-hard). If the spill occurs out of doors, cover the spilled material with a moisture-proof material to prevent degradation of the spilled material. If the covered material is in direct sunlight, measures should be taken to protect it from solar heat, which may cause degradation to commence or accelerate. For small spills, sweep up material from broken containers in a manner that does not form an air-borne dust, and store collected material in secure containers until safe disposal can be arranged. Do not vacuum up spilled material as the dust created may form an explosive mixture when combined with air. If the spilled material has become damp and cannot be used immediately, it should be slurried with water and then stored in suitable containers until proper disposal can be arranged.

6. ACCIDENTAL RELEASE MEASURES - continued

If the spilled material is dispersed in water, use enough absorbent material to contain the spill in the form of a slurry, then scoop up the collected material and store it in suitable containers until proper disposal can be arranged. Do not allow spilled material to contaminate water supplies.

7. HANDLING AND STORAGE

Handling: Do not handle this product near food, feed or water. Keep out of reach of children or animals. An air-borne dust of this material can create a dust explosion. To prevent dust explosions, employ electrical bonding and grounding procedures to control static electricity when handling this product. Avoid breathing spray mist, ingestion and contact with eyes, skin or clothing. Remove and wash contaminated clothing before reuse. Contaminated clothing should be washed separately from domestic laundry and air-dried. Once used for contaminated clothing, the washing machine should be operated through a complete cycle with hot water and soap only, prior to use for domestic laundry. Users should wash hands and face before eating, drinking, chewing gum, using tobacco or the toilet.

Storage: Store in a cool, well-ventilated area. Some degradation products of this material are combustible; avoid ignition sources. Store Gavel 75DF in original sealed containers in well-ventilated warehouses or in shaded, well-ventilated shelters. Store bagged material only on pallets, and allow for free ventilation below and on the sides of stored bags. Provide an access aisle for each two rows of stored material. Un-palleted bags should be stored in loose stacks no more than two meters high/long/wide, and allow for free ventilation below and on the sides of stacked bags. Do not allow this material to become wet or overheated in storage, as decomposition, impaired activity or fire may result. Decomposition produces a foul odor due to formation of toxic, flammable gasses. Since Gavel 75DF is vacuum-packed in watertight bags, it will be evident when the integrity of a bag has been breached (material in bag is no longer rock-hard). Remove offending bags or containers to an open area for disposal.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering controls: Use this product only with adequate ventilation. Local exhaust ventilation may be necessary for some operations.

Breathing: In dusty or misty atmospheres, use an approved particulate respirator.

Protective clothing: Use gloves chemically resistant to this material. When prolonged or frequently repeated contact with this product could occur, use chemically protective clothing resistant to this product. Selection of specific items such as face shield, gloves, boots, apron, or full-body suit will depend on operation being carried out. Applicators and other field handlers, including persons repairing or cleaning application equipment, must wear clean body-covering clothing, impervious gloves and boots. In addition, persons making and/or transferring field dilutions of this product must wear an impervious apron.

Eyes: Use chemical workers' goggles.

Other protection: None stated

9. PHYSICAL AND CHEMICAL PROPERTIES

Boiling point:	not applicable
Vapor pressure:	not applicable
Volatility:	<3% (water)
pH:	6.5 to 7.5
Appearance:	Brown granules
Odor:	Sulfur-like
Coefficient of water/oil distribution:	Not available
Bulk density:	500 to 750 kg/m ³
Evaporation rate:	Not applicable
Solubility in water:	Disperses in water
Freezing point:	Not applicable
Odor threshold:	Not available
Melting point:	This product decomposes before melting.

10. STABILITY AND REACTIVITY

Stability: This product is relatively stable and non-corrosive under normal, dry storage conditions. Keep away from moisture, heat or open flame.

Incompatibility: Avoid contact with acids and oxidizing agents.

Hazardous decomposition products: Thermal decomposition may yield the following products: carbon disulfide, hydrogen chloride, hydrogen sulfide.

Hazardous polymerization: Does not occur

11. TOXICOLOGICAL INFORMATION

Ingestion: Based on information for a similar material, the acute oral LD₅₀ (rat) is expected to be >5000 mg/kg.

Skin: Acute: Based on information for a similar material, the acute dermal LD₅₀ (rat) for a similar material is expected to be >5000 mg/kg.

Inhalation: The maximum practically attainable concentration for the major component (mancozeb) in this formulation (5.0 mg/L for four hours) in the tests produced no ill effects in test animals.

Sensitization: Prolonged or frequently repeated skin contact may cause allergic skin reactions in some individuals.

Chronic effects: In animals, the active ingredients have been reported to cause effects on the thyroid, liver, eye and nervous system.

Cancer: Mancozeb has caused cancer in laboratory animals. Zoxamide did not cause cancer in laboratory animals.

Birth defects: Mancozeb has caused birth defects in laboratory animals only at doses toxic to the mother. Zoxamide did not cause birth defects or any other fetal effects in laboratory animals.

Reproductive effects: In animal studies, the active ingredients in this formulation did not interfere with reproduction.

Mutagenicity: For mancozeb, *in-vitro* genetic toxicity studies were predominantly negative and animal genetic toxicity studies were negative. For zoxamide, *in-vitro* genetic toxicity studies were negative.

12. ECOLOGICAL INFORMATION

The active ingredients in this formulation are not hazardous to bees and are slightly toxic to birds. These active ingredients are highly toxic to aquatic organisms on an acute basis. Bio-concentration potential for mancozeb is not available. Bio-concentration potential for zoxamide is low.

Degradation and Metabolism:

Mancozeb:

Soil/Environment: Mancozeb is rapidly degraded in the environment by hydrolysis, oxidation, photolysis, and metabolism. Mancozeb half-life in soil ranges from six to 15 days.

Plants: Mancozeb is extensively metabolized in plants, forming ETU, ethylenethiuram monosulfide, ethylenethiuram disulfide, and sulfur as transitory intermediates. Terminal metabolites are natural products, especially those derived from glycine.

In animals: Mancozeb is rapidly absorbed into the body from the gastrointestinal tract, distributed to various target organs and almost completely excreted in 96 hours. ETU is the major metabolite. After a single dose, less than one ppm of ETU residues was measured in the thyroid and liver. After 24 hours, these residues were not detectable.

Zoxamide:

Soil/Environment: Soil half-life for zoxamide is two to 10 days; C02 is the major metabolite. Zoxamide is considered to have low mobility in most soils, with no or low leaching potential.

Plants: With foliar applications of zoxamide, such as grapes, tomatoes, and cucurbits, the major residue is parent compound. In potatoes, on the other hand, no parent compound was found in the radio-labelled metabolism study and parent compound is rarely found in tubers from residue trials. Two benzoic acid cleavage products were found in the metabolism study, but are rarely found in residue trials conducted at label rates.

Animals: In goats, the majority (77% of the ingested material) was excreted in urine and feces. The metabolism of zoxamide occurred via multiple pathways including hydrolysis, the glutathione pathway, reductive dehalogenation, oxidation and conjugation with amino acids and glucuronic acid. No toxicologically significant residues are expected to be found in foods from ruminant animals.

13. DISPOSAL CONSIDERATION

Unused unwanted product: Contact Gowan Company or your provincial regulatory agency for disposal information.
Container disposal: Refer to the product label for instructions regarding cleaning and disposal of empty pesticide containers. If these instructions are missing or not understood, contact Gowan Company at 800 883-1844 or your provincial regulatory agency for direction.

14. TRANSPORT INFORMATION

DOT Classification

Not regulated

TDG Classification

Not regulated

IMDG Classification

UN3077, Environmentally Hazardous Substance, Solid, N.O.S. (mancozeb), 9, PGIII, Marine Pollutant, F-A, S-F

IATA Classification

UN3077, Environmentally Hazardous Substance, Solid, N.O.S. (mancozeb), 9, PGIII

15. REGULATORY INFORMATION

WHMIS Classification

This product is registered under the *Pest Control Product Act* and is exempt from the requirements of WHMIS.

U.S. REGULATIONS

SARA Title III Classification

Section 302/304:

Section 311/312:

Immediate (acute) health hazard

Delayed (chronic) health hazard

SARA 313 INFORMATION: This product contains the following substances subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372:

CHEMICAL NAME	CAS No.	CONCENTRATION
Ethylene Thiourea	000096-45-7	<0.1%
Mancozeb	008018-01-7	66.7%

Generic Group Name for Mancozeb:

Ethylenebisdithiocarbamic Acid (CAS # 000111-54-6)

CALIFORNIA PROPOSITION 65: The following statement is made in order to comply with the California Safe Drinking Water and Toxic Enforcement Act of 1986:

This product contains trace levels of a component known to the state of California to cause cancer, birth defects, or other reproductive harm. The component is Ethylene thiourea (000096-45-7)

This product contains a component know to the state of California to cause cancer. The component is Mancozeb (008018-01-7)

TOXIC SUBSTANCES CONTROL ACT (TSCA): All ingredients are on the TSCA inventory or are not required to be listed on the TSCA inventory.

STATE RIGHT-TO-KNOW: The following product components are cited on certain state lists as mentioned. Non-listed components may be shown in the composition section of the MSDS.

CHEMICAL NAME	CAS NUMBER	LIST
Ethylene Thiourea	000096-45-7	NJ1 NJ2 NJ3 PA1 PA2 PA3
Hexamethylene Tetramine	000100-97-0	NJ3
Ethylenebisdithiocarbamic Acid	000111-54-6	NJ3 PA1 PA3

NJ1=New Jersey Special Health Hazard Substance (present at greater than or equal to 0.1%).

NJ2=New Jersey Environmental Hazardous Substance (present at greater than or equal to 1.0%).

NJ3=New Jersey Workplace Hazardous Substance (present at greater than or equal to 1.0%).

PA1=Pennsylvania Hazardous Substance (present at greater than or equal to 1.0%).

PA2=Pennsylvania Special Hazardous Substance (present at greater than or equal to 0.01%).

PA3=Pennsylvania Environmental Hazardous Substance (present at greater than or equal to 1.0%).

15. REGULATORY INFORMATION - continued

OSHA HAZARD COMMUNICATION STANDARD: This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

CERCLA Reportable Quantity (RQ)

Ethylenethiourea	10 (4.54)
Ethylenebisdithiocarbamic acid, salts & esters	5000 (2270)

RCRA Classification

Under RCRA, it is the responsibility of the product user to determine at the time of disposal, whether a material containing the product or derived from the product should be classified as a hazardous waste.

16. OTHER INFORMATION

NFPA Hazard Ratings

Health:	2
Flammability:	1
Reactivity:	1

0	Least
1	Slight
2	Moderate
3	High
4	Severe

Prepared By:

Gowan Company
(800) 883-1844

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